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Title *Radar Cross Section (RCS) of a Series-Fed Dipole Array including Mutual Coupling Effect*

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Abstract

The estimation of RCS of a phased array depends on various parameters, viz. array geometry, frequency, feed network, mutual coupling between the antenna elements etc. This report presents the formulation of RCS of linear dipole array with series-feed network. The effect of mutual coupling exhibited by the dipole antenna is considered for three configurations viz. side-by-side, collinear and parallel-in-echelon. The simulation results compare the RCS pattern with and without mutual coupling. It is shown that the mutual coupling affects the antenna pattern (and hence RCS) significantly for larger scan angles. It is inferred that the RCS of phased array can be optimized by (i) Reducing the length of the dipole, (ii) Termination of the isolation port of the coupler with a suitable load and (iii) Using suitable amplitude distribution.